CHICAGO JOURNALS

Modification of Hand Microtome
Author(s): T. H. Goodspeed
Reviewed work(s):
Source: *Botanical Gazette*, Vol. 66, No. 6 (Dec., 1918), pp. 534-536
Published by: The University of Chicago Press
Stable URL: http://www.jstor.org/stable/2469419
Accessed: 16/11/2012 01:22

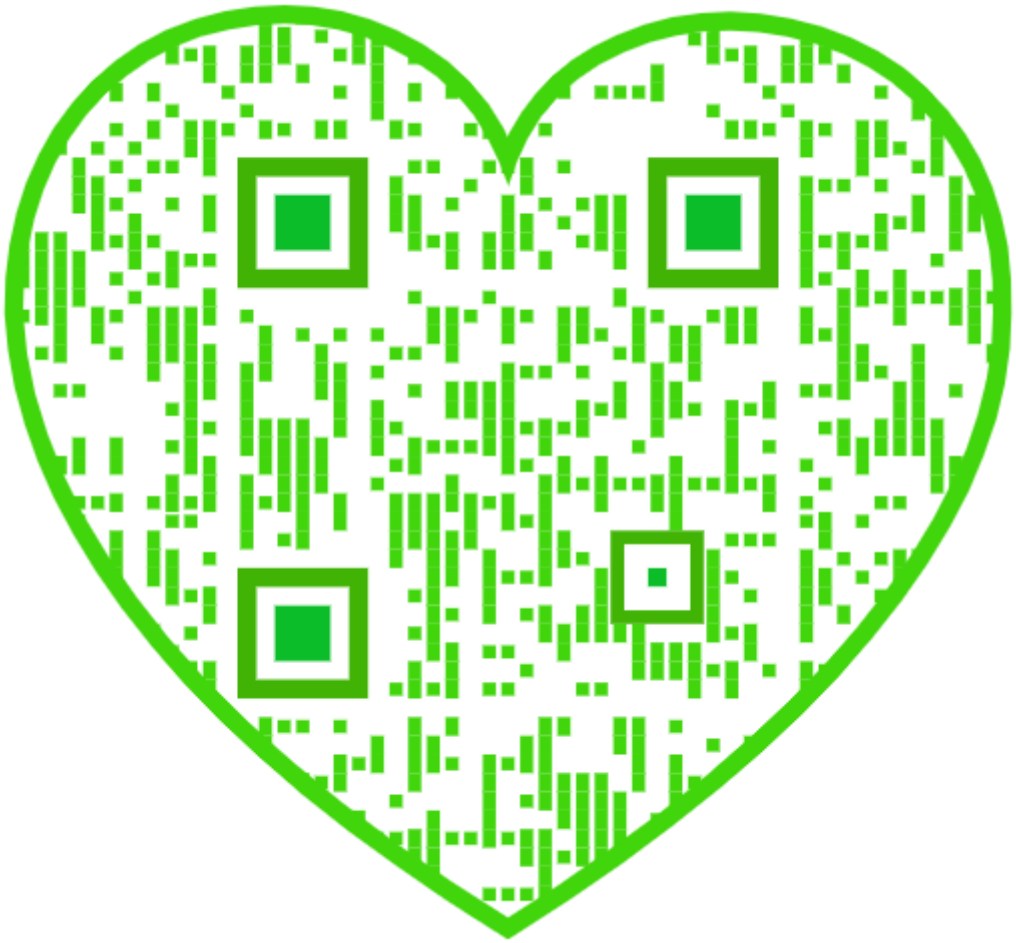
Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at
http://www.jstor.org/page/info/about/policies/terms.jsp

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

The University of Chicago Press is collaborating with JSTOR to digitize, preserve and extend access to *Botanical Gazette.*

http://www.jstor.org

This content downloaded by the authorized user from 192.168.72.228 on Fri, 16 Nov 2012 01:22:16 AM
All use subject to JSTOR Terms and Conditions



BRIEFER ARTICLES

MODIFICATION OF HAND MICROTOME

(WITH FIVE FIGURES)

Figs. 1–5 represent a simple modification of the familiar hand microtome, and one which has been found to be a decided improvement over the original instrument from which it was derived. In the ordinary type, when cutting sections of woody stems or more delicate material held in pith, it is always difficult to be certain of obtaining the necessary pressure for holding the material at the proper point. The steel rod which moves in or out upon the turning of the single pressure screw will usually hold the material firmly at its lower end but not so firmly at its upper end, with the result that the material has a tendency to wobble when the knife begins to cut the section. On the other hand, when this difficulty does not arise it is often almost impossible to screw up the material for the next section because of the pressure of the material against the walls of the tube or well.

To obviate these rather commonly encountered difficulties in the ordinary type of hand microtome the modification of it shown in the figures was devised. Figs. 4 and 5 give two views of an inner "material holder." It consists of two pieces of curved steel which are long enough to reach to the bottom of the tube or well (just below *cc* in fig. 2). This inner material holder is provided with a spreading spring at *ed* which surrounds a small steel bar *cc*. Each curved piece of steel has a hole at *aa* (fig. 4) through which project the ends of the two pressure screws *bb* (fig. 2). The manipulation of the apparatus is as follows where, for example, cross-sections of a woody stem are to be cut. The pressure screws *bb* are turned out until their ends at *aa* are pulled out of the holes in the material holder. The microtome is inverted and the material holder falls out. The stem or a portion of it is placed between the leaves of the material holder and properly oriented and, if necessary, a rubber band is bound around the material holder just above *aa*. The material holder containing the stem is now pushed down into the well or tube of the microtome and oriented so that the holes are opposite the ends *aa* of the turned-back pressure screws. These screws are

This content downloaded by the authorized user from 192.168.72.228 on Fri, 16 Nov 2012 01:22:16 AM
All use subject to JSTOR Terms and Conditions

turned in, their ends pass into the holes in the material holder, and pressure is finally exerted on both sides. As the pressure becomes

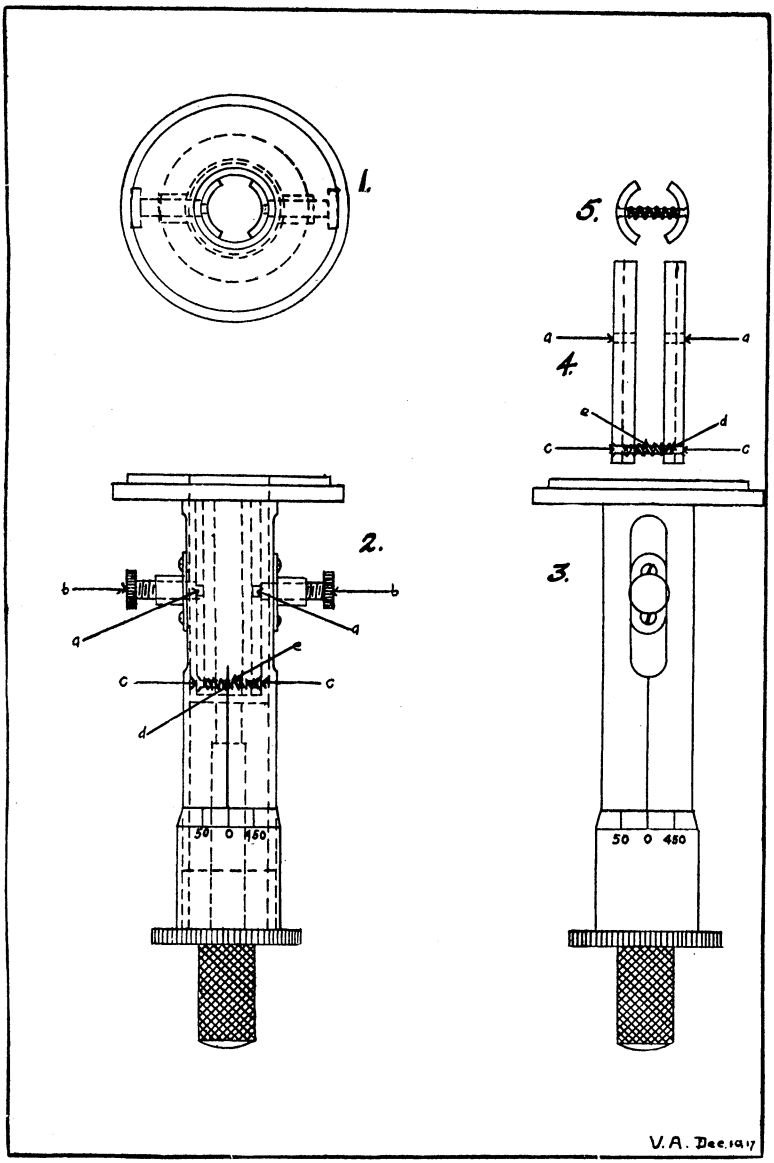


FIG. 1.—Modification of hand microtome

This content downloaded by the authorized user from 192.168.72.228 on Fri, 16 Nov 2012 01:22:16 AM
All use subject to JSTOR Terms and Conditions

greater, the spring at *de* prevents the upper ends of the material holder from spreading and insures maximum pressure against the material at these upper ends. Finally the stem is held firmly in the center of the tube or well of the microtome between the leaves of the material holder. The pressure screws are free to move up or down in their openings because no appreciable pressure is exerted upon the walls of the tube or well.

In a similar manner material held in pith is very conveniently arranged in this apparatus. The possibility of arranging and orienting such material held in pith in the material holder outside the microtome is an obvious advantage. Longitudinal sections of small woody stems are readily cut in this modified hand microtome, whereas their small diameter makes it very difficult to secure them firmly in the original apparatus. As may be seen, it is possible to orient material to obtain all angles in the case of sections to be cut obliquely or in the case of unsymmetrical material.

This modified hand microtome was devised to meet a special need and has admirably served its original purpose. This description of it is presented primarily because it illustrates the possibility of modifying an apparatus in a relatively simple and inexpensive manner to increase greatly its convenience and the range of its usefulness. The original modification from which the drawing was made has been somewhat improved recently. The knurled heads *bb* should be much larger than those illustrated, and for woody stems the leaves of the material holder should be thicker and their inner surfaces more nearly flat.—T. H. GOODSPEED, *University of California.*

This content downloaded by the authorized user from 192.168.72.228 on Fri, 16 Nov 2012 01:22:16 AM
All use subject to JSTOR Terms and Conditions